WARZYN

PROJECT
1526892

VOLUME II OF III

PLANNING DOCUMENTS
HEALTH AND SAFETY PLAN
FINAL

REMEDIAL
INVESTIGATION/FEASIBILITY STUDY

BELOIT CORPORATION
ROCKTON FACILITY
ROCKTON, ILLINOIS

MAY 1994

PREPARED FOR:
BELOIT CORPORATION
ROCKTON, ILLINOIS

...

PREPARED BY:
WARZYN INC.
MADISON, WISCONSIN

PROJECT
1526800

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BELOIT CORPORATION
ROCKTON FACILITY
ROCKTON, ILLINOIS

MAY 1994

Kevin J. Domack
Project Manager

Erik A. Goplin
Health and Safety Manager

NOTICE TO USER

This Health and Safety Plan prepared by Warzyn Inc. for work at Beloit Corporation's Rockton Facility incorporates a copy of Beloit Corporation's Contractor Safety Handbook as Appendix C. While Warzyn's standard health and safety plan covers most health and safety issues covered in the Contractor Safety Handbook, it does not cover all issues (e.g., hot work). For this reason, the user of this document must read and comply with the requirements of Beloit Corporation's Contractor Safety Handbook too. If a contradiction between plans is found, please contact your Site Safety Officer so that he can clarify the issue with Beloit Corporation's Health and Safety Administrator.

This Site Health and Safety Plan does not supersede or in any way relieve any contractor of their obligations under any applicable OSHA regulations including, but not limited to, 29 CFR 1910: Occupational Safety and Health Standards and 29 CFR 1926: Health and Safety Regulations for Construction.

Warzyn personnel working at this site meet the training and medical monitoring requirements of 29 CFR 1910.120: Hazardous Waste Operations and Emergency Response. Documentation of this training and medical surveillance can be obtained upon written request to Warzyn Inc., Corporate Health and Safety Manager, Madison, Wisconsin.

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1

INTRODUCTION

SITE DESCRIPTION

The site is located near the Village of Rockton in Winnebago County, Illinois, in the northern half of Section 13 and the southeast quadrant of Section 12, Township 46 North, Range 1 East. The site is bordered to the west by the Rock River; to the north by Prairie Hill Road; to the east by Blackhawk Blvd.; and to the south by a line projected from Blackhawk Blvd. to the Rock River along an east-west access road that lies between Blackhawk Blvd. and the Rock River. The site can generally be divided into two components, the Beloit Corporation property and the Blackhawk Acres Subdivision.

The Beloit Corporation, a subsidiary of Harnischfeger Industries, is a manufacturer of machines that produce layered paper products from paper pulp. The Beloit Corporation manufacturing plant is located at 1165 Prairie Hill Road in Rockton, Illinois. In addition to the manufacturing plant, a Research and Development Center (R&D Center) is located on Beloit Corporation property. The R&D Center designs and demonstrates paper-making machines. The property upon which the facility is located was farmland prior to ownership by the Beloit Corporation in 1957.

There are several structures located on Beloit Corporation property. Two wastewater treatment ponds and two clarifier tanks are located on the northernmost portion of the property. The R&D Center (H40,000 sq ft) is located immediately southeast of the wastewater facility. The Beloit Corporation Plant (H230,000 sq ft) is southwest of the R&D Center. Large open storage areas exist on the northeast and southwest sides of the plant. These storage areas are partially paved with asphalt. Also, asphalt parking lots exist between the plant and the R&D Center, and between the plant and Watts Avenue. A foundry sand disposal area is located west of the plant and a fibrous sludge spreading area is located southwest of the plant. A line of trees exist along the bank of the Rock River on Beloit Corporation property. The gravel pit, owned by Beloit Corporation, is separated from the main Beloit Corporation property by a company driveway and railroad tracks.

Additional structures identified within the site boundary are the homes and roadways that make-up the Blackhawk Acres Subdivision, and buildings and paved areas at Safe-T-Way and Soterion/United Recovery.

SITE HISTORY

The investigation of the site by the IEPA and U.S. EPA developed from the investigations of complaints against United Recovery in 1980. Subsequent investigations led to a groundwater quality study of the entire area in the vicinity of the former United Recovery and Beloit Corporation properties.

The former United Recovery facility was an industrial waste processing plant located at 900 Watts Avenue. The facility reclaims high speed drill cuttings and cooling oil. Complaints of poor waste handling practices and detections of elevated levels of volatile organic compounds (VOCs) in many of the homes located on Watts Avenue near the former United Recovery facility prompted the IEPA to investigate the former United Recovery facility on several occasions from 1980 through 1982. During their inspections of the facility, the IEPA documented releases of waste oils on the facility grounds, in the septic system, and in the dry well located on the United Recovery property. Water quality samples taken by the IEPA in 1981 and 1982 from the former United Recovery facility indicated the presence of elevated levels of metals, BOD, and COD in the septic system.

During October 1981, Beloit Corporation applied sludge from their wastewater treatment lagoons to approximately 10 acres of land at the southwest end of the Beloit Corporation property. A chemical analysis of the sludge indicated elevated concentrations for chloroform (50 to 354 ug/L) and trans-1,2-dichloroethene (<35 to 363 ug/L).

On March 2, 1983, the IEPA collected two samples from the bottom of one of the cells of Beloit Corporation's three-celled wastewater treatment impoundment. VOCs were detected in the analysis. Additional wastewater samples were collected in 1983 and 1984 by both the Beloit Corporation and the IEPA. These samples also contained concentrations of VOCs in the parts per billion (ppb) range.

In May 1983, Beloit Corporation collected a sample of wastewater from the R&D Center before it entered the wastewater treatment lagoons. The analysis indicated a concentration of 6.3 ug/L tetrachloroethene.

In October 1983, groundwater monitoring wells W1, W2, and W3 were installed on Beloit Corporation property to comply with an IEPA permit

requirement. Since 1984, semi-annual VOC sampling has been required at these wells. The following VOCs were detected: trichloroethene (6 to 142 ug/L), 1,1,1-trichloroethane (5 to 512 ug/L), tetrachloroethene (6 to 18 ug/L), and 1,1-dichloroethane (trace to 18 ug/L).

In January 1984, 17 private water supply wells were sampled for VOCs. Concentrations of VOCs detected in the wells ranged from < 1 to 175 ug/L. The VOCs detected included: 1,1,1-trichloroethane; trichloroethene; 1,1-dichloroethene; 1,1-dichloroethane; trans-1,2-dichloroethene; and tetrachloroethene.

In October 1985, five 55-gallon drums were discovered near well MW6. The material had a paint-like odor and contained low levels of barium and cadmium, as well as several VOCs.

From 1984 through 1989, Warzyn was contracted to assess groundwater quality at the site. Numerous soil borings and monitoring wells were installed and sampled during this period.

During July 1987, the three-celled wastewater treatment impoundment operated by Beloit Corporation was taken off-line. A new wastewater treatment system was constructed in October 1988.

On June 24, 1988, the site was proposed for inclusion on the Superfund National Priorities List (NPL). On August 30, 1990, the site was officially entered on the NPL.

TOPOGRAPHY AND DRAINAGE

The site is located on the broad (approximately 8-mile wide), relatively flat, Rock River/Pecatonica River alluvial valley. Surface elevations range from approximately 900 ft mean sea level (MSL) on the broad gently rolling uplands, to slightly less than 720 ft MSL, where the floor of the Rock River/Pecatonica River alluvial valley meets the southerly flowing Rock River and the easterly flowing Pecatonica River. Upland topography is primarily controlled by erosion and bedrock topography. The Rock River/Pecatonica River alluvial valley topography is primarily controlled by post glacial fluvial erosional and depositional processes.

The rolling topography on the uplands directs runoff toward the Rock and Pecatonica Rivers which are responsible for draining this area and which are the only substantial surface water features in the vicinity. The southeastern portion of the site is situated above the 100-year flood plain on well-drained, highly

permeable sands and gravels; whereas the northwestern portion of the site is situated below the 100-year flood plain on poorly-drained sands, silts and clays. As a result, surface water drainage in the vicinity of the site is generally poorly developed.

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SCOPE OF WORK

ELECTROMAGNETIC/MAGNETOMETER SURVEY

Information collected during previous investigations conducted by Beloit Corporation and information provided by the IEPA indicated the possible existence of an underground storage tank at 1314 Watts Avenue in the Blackhawk Acres Subdivision and at the Soterion property, respectively. An electromagnetic (EM)/magnetometer survey will be conducted at 1314 Watts Avenue and the Soterion property to determine the presence and location of underground storage tanks and/or buried metal drums, if any.

SOIL GAS SURVEY

A soil gas survey will be conducted over the majority of the site both outside and inside the facility buildings and will be concentrated more specifically at potential source locations. If a potential source is identified during the initial round of soil gas sampling, a more concentrated grid of soil gas samples may be selected by the field crew around the suspect area for an additional sampling round. Soil gas samples will be analyzed in the field using a portable GC unit.

SHALLOW SOIL BORINGS AND SOIL SAMPLING

Shallow soil borings will be performed in potential contaminant source areas both outside and inside the facility buildings identified during the soil gas survey and previous investigations. Additional borings may be selected based on the results of the surface geophysical and soil gas surveys. The purpose of these soil borings is to collect soil samples in potentially contaminated areas. Each sample will be screened in the field for indications of VOCs with direct reading organic vapor monitor (OVM) using the field headspace method. Based on the OVM results, soil samples from each boring location will be selected for laboratory analysis.

SURFACE SOIL SAMPLING

Surface soil samples will be obtained from the locations chosen for the shallow soil borings. The samples will be collected from the upper 6 in. of soil and will be submitted for laboratory analysis. Well installation will occur both outside and inside facility buildings. One background surface soil sample will be collected for laboratory analysis. The sample location will be selected in the field.

MONITORING WELL INSTALLATION AND SOIL SAMPLING

The objective for conducting borings at the site is to further characterize site hydrogeology and to screen for groundwater contamination while drilling by obtaining groundwater samples for GC analysis. Well installation will occur both outside and inside facility building. The objective for installing additional groundwater monitoring wells is to obtain aquifer hydraulic and water level data to determine aquifer properties, and the groundwater flow direction. Groundwater quality data will also be collected to evaluate for the presence or absence of groundwater contamination. Twenty-two borings will be drilled at 14 locations to evaluate site-specific subsurface stratigraphy and groundwater quality, and to ground-truth the natural gamma logger, and for installation of 16 groundwater monitoring wells.

WELL DEVELOPMENT

Each well will be developed after installation by first surging the well with a bailer and then removing at least ten casing volumes of water using a bailer or pump.

BOREHOLE GEOPHYSICAL INVESTIGATION

A down-hole natural gamma ray logging tool will be used on selected existing and new monitoring wells to differentiate and identify soil stratigraphic units and variations in the clay content in the soil matrix. This natural gamma logging tool will be ground-truthed in geotechnical boring GB1.

INSPECTION OF EXISTING MONITORING WELLS

Existing monitoring wells will be inspected to determine whether they are

functional. Total well depth will be measured and compared to the originally reported well depth. Surface well seals will be observed for integrity. Wells will be redeveloped, if necessary, to provide representative water level measurements. Functional wells will be included in the water level measurement task and certain wells constructed of stainless steel may be included in groundwater quality sampling activities. Wells which are determined to be non-functional will be abandoned in accordance with IEPA's guidance document, "Monitor Well Plugging Procedures."

MONITORING WELL AND STANDPIPE ABANDONMENT

Four existing monitoring wells and seven existing standpipes will be abandoned during Phase 1 of the RI. They will be abandoned in accordance with IEPA's guidance document, "Monitor Well Plugging Procedures." This method does not require the use of any drilling equipment.

GROUNDWATER LEVEL MEASUREMENTS

Groundwater level measurements will be made at existing and new wells at least four times during the migration pathway assessment and on a bi-monthly basis for a period of one year. The number of measurement periods may be reduced or discontinued if review of data collected during the migration pathway assessment suggests temporal water level variations are minimal. Groundwater level measurements will also be taken during each groundwater sampling event. Surface water measurements will also be taken at staff gauges located along the Rock River during each measurement event. Existing functional wells for which construction details exist will be included in the water level surveys.

HYDRAULIC CONDUCTIVITY TESTING

Hydraulic conductivity testing of the new monitoring wells and selected existing wells will be performed. In-situ single well hydraulic conductivity tests will be performed to assess hydraulic conductivity and groundwater flow rates. Baildown tests will be performed on water table wells and piezometers.

LOCATION AND ELEVATION SURVEY

A location and elevation survey will be performed to locate soil borings, monitoring wells, and other sampling locations.

GROUNDWATER QUALITY CHARACTERIZATION

Groundwater quality characterization will be conducted to evaluate the magnitude and extent of groundwater contamination in the vicinity of the site. Two rounds of groundwater samples will be collected. Round 1 (Phase 1) will consist of sampling the 16 monitoring wells installed during Phase 1 and the 14 existing monitoring wells constructed of stainless steel.

Results of Round 1 will be used to determine contaminants of concern. Round 2 (Phase 2) sampling will consist of sampling wells and analyzing samples for indicator parameters and contaminants of concern identified during Round 1.

SURFACE WATER AND SEDIMENT INVESTIGATION

A surface water and sediment investigation will be performed in order to determine surface water drainage patterns on and about the site and water level fluctuations in the Rock River. A scientist/engineer will visually locate, identify, and map drainage patterns at the site. Surface water level measurements will be collected at staff gauge locations.

ECOLOGICAL ASSESSMENT

A preliminary ecological assessment of the site and adjacent areas will be performed by the IEPA to evaluate ecological resources. A qualitative preliminary ecological assessment will also be developed to evaluate potential contamination during site chemicals detected during RI sampling activities.

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SITE HAZARDS

SITE CHEMICAL HAZARDS

The primary hazards at the site are volatile organic compounds (VOCs). A summary of VOCs present at the site, their concentrations and locations are found in Table 1.

The primary routes of possible exposure to the VOCs present on site are either direct dermal contact with contaminated soils and water, or inhalation of volatile organic vapors.

Protection from VOCs present at the site may require respiratory protection. Standard hazardous-waste-site protocol requires adequate respiratory protection to be worn in areas where workers' breathing zone concentrations of VOCs are elevated above background level. There is no existing data on airborne contaminants at this site.

Direct contact with contaminated soil and water is to be avoided. If contact is necessary to perform work, the proper protective clothing, as stated in Section 4, must be worn. In areas where field activities create dust, personnel are to wear full face piece respirators with cartridges designed for protection against dusts and mists. Tables 2 and 3 give physical and chemical characteristics for contaminants found at the site.

SITE PHYSICAL HAZARDS

1. Weather Considerations - Working in hot or cold weather requires special health and safety considerations. Appendix A to this plan, Health and Safety Standard Operation Procedure - Temperature Stress, describes symptoms of temperature stress and responses for emergencies due to heat or cold exposure.

2. Use of Heavy Equipment - Activity around, and use of, heavy equipment presents hazards to personnel on site. Personnel must engage in standard safe operating procedures when operating drill rigs, earth movers, and other heavy equipment. Only personnel actively involved in associated operations are to be in the vicinity of heavy equipment. Use caution when working around heavy equipment. Hard hats, safety glasses with side shields, and steel-toed boots are to be worn within a 50-ft radius of heavy equipment. Hearing protection should be worn as necessary around operating heavy equipment. Generally, if you cannot speak in a normal conversational level and be heard 3 ft away, hearing protection is required. The work area must be controlled to prevent unauthorized personnel from entering.

   Note: When using heavy equipment such as drill rigs or Geoprobe™ units inside the facility buildings, necessary precautions must be taken to maintain worker safety. This will include positioning overhead cranes appropriately and deenergizing the cranes using lockout tagout procedures. All indoor activities will be coordinated with appropriate Beloit Corporation personnel by Warzyn's Site Safety Officer.

3. Power Lines and Utilities - Activity around overhead power lines or buried utilities presents hazards to personnel on site. There must be at least 15 ft clearance when working under overhead power lines with heavy equipment. As a general rule, the minimum lateral distance to overhead power lines from heavy equipment is to be 15 ft or a distance equivalent to the height of the equipment, whichever is greater. All buried utilities must be cleared before proceeding with intrusive activities. Extra precautions are required in buildings due to possible utility lines in the vicinity on boring locations. The SSO will consult with facility management concerning possible utility locations and a magnetometer will be used to verify conditions are safe before borings are conducted.

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SECTION 3
CHEMICAL HAZARD INFORMATION

TABLE 1
Site Chemical Hazards

Chemical	Maximum Concentration	Location
trichloroethene	92.3 ug/L	W18
trans-1,2-dichloroethene	363 ug/kg	Sludge Stock Piles
1,1,1-trichloroethane	233 ug/kg	B4
1,1-dichloroethane	505 ug/kg	B4-2.5 ft
1,1-dichloroethene	17 ug/L	910 Watts Ave.
methylene chloride	2060 ug/kg	B5-7.5 ft
chloroform	354 ug/kg	Sludge Stock Piles
toluene	311 ug/kg	B5-7.5 ft
xylenes	416 ug/kg	B5-7.5 ft
ethylbenzene	95.4 ug/kg	B5-7.5 ft
tetrachloroethene	300 ug/L	910 Watts Ave.
bromoform	1 ug/L	910 Watts Ave.
benzene	84.7 ug/kg	B5-7.5 ft
acetone	34,000 ug/L	G103D

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SECTION 3
CHEMICAL HAZARD INFORMATION

TABLE 2
Chemical Properties

Name	Molecular Weight	Specific Gravity	Flash Point	Flam. Limits	Vapor Press.	Vapor Density	Ionization Potential	Solubility
ethylbenzene	106	0.863	<-4◦F	6.7-11.3%	375 mm	NA	10.29 eV	0.9%
xylene	106	0.088	81-90◦F	1-7%	9 mm	NA	8.56 eV	0.00003%
toluene	92	0.867	40◦F	1.3-7.1%	22 mm	NA	8.82 eV	0.05%
acetone	58	0.791	1.4◦F	2.6-12.8%	266 mm	2.0	9.69 eV	miscible
trans-1,2-dichloroethene	99	1.253	55◦F	6.2-16%	62 mm	3.4	9.66 eV	0.8%
trichloroethene	131	1.46	None	11-41%	58 mm	4.5	9.47 eV	0.1%
tetrachloroethene	166	1.62	None	---	14 mm	NA	9.32 eV	0.015%
1,1-dichloroethene	97	1.21	0◦F	7.3-16%	665 mm	3.3	NA	0.5%
methylene chloride	85	1.322	None	12%-19%	350 mm	2.9	11.35 eV	1.3%
benzene	78	0.879	12◦F	1.3-7.1%	75 mm	2.7	9.25 eV	0.8%
1,1,1-trichloroethane	133	1.35	NA	7-16%	100 mm	4.6	11.25 eV	0.07%
1,1-dichloroethane	99	1.17	17◦F	6-16%	182 mm	3.4	11.06 eV	<0.1%
chloroform	119	1.49	NA	NA	160 mm	4.12	11.37 eV	0.8%
bromoform	253	2.89	NA	NA	5 mm	8.7	10.48 eV	0.1%

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SECTION 3
CHEMICAL HAZARD INFORMATION

TABLE 3
Health Properties

Name	Odor Characteristic	Odor Threshold (PPM)	TLV (PPM)	IDLH Dermal (PPM) Toxicity
ethylbenzene	pungent, aromatic	0.25-200	100	2,000 moderate
xylene	hydrocarbon	0.05-200	100	10,000 NA
toluene	benzene-like	0.17-40	100	2,000 slight
acetone	mint-like	100	750	20,000 moderate
trans-1,2-dichloroethene	chlorinated hydrocarbons	6.2-100	200	1,000 NA
trichloroethene	sweet	21.4-400	50	1,000 moderate
tetrachloroethene	sweet	4.68-50	50(1)	500 NA
1,1-dichloroethene	sweet	0.085-500	5(2)	4,000 NA
methylene chloride	sweet	25-320	50	5,000 moderate
benzene	hydrocarbon-like	4.68	10(3)	2,000 extreme
1,1,1-trichloroethane	chloroform-like	100	350	1000 slight
1,1-dichloroethane	chloroform-like	NA	200(4)	4000 NA
chloroform	sweet	205-307	10(5)	1000 NA
bromoform	chloroform-like	NA	0.5*	NA NA

General Notes:

1. Organic vapor cartridges are approved for use with all solvents except methylene chloride.
2. NA = Not Available
3. * = Skin exposure limit

Footnotes:

(1) PEL for Tetrachloroethene is 25 PPM
(2) PEL for 1,1-Dichloroethene is 1 PPM
(3) PEL for Benzene is 1 PPM
(4) PEL for 1,1-dichloroethane is 100 PPM
(5) PEL for chloroform is 2 PPM

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PERSONNEL PROTECTION EQUIPMENT REQUIREMENTS

Personnel performing duties on site must abide by the appropriate ensemble of personal protective equipment, unless performing oversight duties from upwind support areas. Changes in levels of protection may be initiated by the site Safety Officer (SSO), but downgrades in level of protection must involve consultation with the Health and Safety Coordinator (HSC).

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Level D
Level D is to be worn during activities which do not suggest any initial respiratory or dermal health hazards. The following list outlines the personal protective equipment to be utilized for Level D:

Required PPE:

- Steel-toe/steel-shank work boots or steel-toe/steel-shank neoprene boots
- Work uniform

Optional PPE - Use as needed:

- Eye protection (safety glasses and side shields, with or without faceshield)
- Hard hat
- Hearing protection

Level D - Modified
Level D - Modified is to be worn during activities which do not suggest any initial respiratory hazards, but where dermal protection is warranted. The following outlines this level of protection:

Required PPE:

- Steel-toe/steel-shank work boots with Saranex-coated inner overboots and latex outer overboots or steel-toe/steel-shank neoprene boots
- Polyethylene coated Tyvek coveralls
- Nitrile or neoprene outer gloves
- Vinyl inner gloves

Optional PPE - Use as needed:

- Hard hat
- Eye protection (safety glasses and side shields, with or without faceshield)
- Hearing protection

Level C

Level C is to be worn when breathing zone organic vapor air contamination is between background and 5 ppm (according to OVM readings) or when work activities generate dust. The following outlines this level of protection:

Required PPE:

- Steel-toe/steel-shank work boots with Saranex-coated inner overboots and latex outer overboots or steel-toe/steel-shank neoprene boots
- Polyethylene coated Tyvek coveralls
- Nitrile or neoprene outer gloves
- Vinyl inner gloves
- Full-facepiece air-purifying respirator
- GMC-H respirator cartridges

Optional PPE - Use as needed:

- Hard hat
- Faceshield
- Hearing protection

Level B
Level B protection is to be worn when work area organic vapor air contamination is greater than 5 ppm, and less than 50 ppm.

Required PPE:

- Steel-toe/steel-shank work boots with Saranex-coated inner overboots and latex outer overboots or steel-toe/steel-shank neoprene boots
- Polyethylene coated Tyvek coveralls
- Nitrile or neoprene outer gloves
- Vinyl inner gloves
- Positive pressure self-contained breathing apparatus (SCBA), or airline respirator

Optional PPE:

- Hard hat
- Faceshield
- Hearing protection

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AIR MONITORING EQUIPMENT (Available On Site)

- HNu portable photoionization organic vapor detector with an 11.7 eV lamp, calibrated with isobutylene standard. Calibration gas concentration should be between 50 and 150 ppm.

ACTION LEVELS

Readings upon which action levels are based are those taken in the worker's breathing zone; i.e., within a foot of the head of the worker closest to a source of contamination during normal activities. Readings to be considered should be persistent rather than instantaneous maximum values.

PID

Readings at or below background concentration - Level D

Readings greater than background concentration, but less than or equal to 5 ppm over background - Level C

Readings greater than 5 ppm over background concentration, but less than 50 ppm - Level B

Readings greater than 50 ppm - Depart from the immediate area.

Note: The PID does NOT detect methane gas.

CALIBRATION REQUIREMENTS

Calibrate all monitoring equipment at the beginning and end of each work day.

When air monitoring is required, take area air samples at the following locations daily. Record time and results of monitoring:

- Upwind of work areas to establish background air contaminants.
- In support zone to check for contamination.
- Along decontamination line to check that decontamination workers are properly protected and on-site workers are not removing protective equipment in a contaminated area.
- Exclusion zone to verify level of protection and exclusion zone boundaries.
- Downwind of work area to track any contaminants leaving site.

FREQUENCY

Perform air monitoring whenever any of the following situations arise:

- Work begins at different portion of the site.
- New contaminants are noted.
- A new/different phase of work is started.
- Work is being performed in areas with obvious liquid contamination.
- Intrusive activities.

Conduct monitoring of the person collecting samples:

- If samples are being collected in jars, use monitoring equipment to determine the level of contaminants in the breathing zone of the person collecting samples.

In addition, personnel shall cease activities and move to a safe location if:

- The above meter malfunctions. Work may resume when meter is repaired or replaced.
- Odors or other signs of breakthrough, such as eye irritation, are experienced while wearing respirators.
- Any member of the field team experiences symptoms possibly related to chemical exposure, or temperature stress, such as dermatitis, dizziness, vomiting, etc.

Should conditions exist which cause the cessation of work, personnel should immediately leave the work area and perform decontamination in the nearest practical location following safe and prudent practices. A prompt report by telephone must then be placed to the Health and Safety Coordinator, Project Manager or Corporate Health and Safety Manager to determine further appropriate actions. Any necessary medical attention, beyond first aid, which might be required will be sought utilizing the emergency facilities and numbers listed under "Emergency Reference Numbers" (Section 13) in this document.

SPECIFIC HAZARD EVALUATION

Electromagnetic/Magnetometer Survey
Level D
Air monitoring is not required

Soil Gas Survey
Level D with upgrade to D-Modified* or C
Air monitoring required

Shallow Soil Borings and Soil Sampling
Level D with upgrades to D-Modified*, C or B
Air monitoring required

Surface Soil Sampling
Level D with upgrade to D - Modified*
Air monitoring is not required

Monitoring Well Installation and Soil Sampling
Level D with upgrades to D-Modified*, C or B
Air monitoring required

Well Development
Level D with upgrades to D-Modified*, C or B
Air monitoring required

Borehole Geophysical Investigation
Level D with upgrade to D-Modified*
Air monitoring is not required

Inspection of Existing Monitoring Wells
Level D with upgrade to D-Modified*
Air monitoring is not required

Monitoring Well and Standpipe Abandonment
Level D with upgrade to D-Modified*
Air monitoring is not required

Groundwater Level Measurement
Level D with upgrade to D-Modified*
Air monitoring is not required

Hydraulic Conductivity Testing
Level D with upgrade to D-Modified*
Air monitoring is not required

Location and Elevation Survey
Level D
Air monitoring is not required

Groundwater Quality Characterization
Level D with upgrade to D-Modified*
Air monitoring is not required

Surface Water and Sediment Investigation
Level D
Air monitoring is not required

Ecological Assessment
Level D
Air monitoring is not required

* Level D is to be used when there is no dermal contact with contaminated materials. Level D-Modified is to be used when there is dermal contact with contaminated materials.

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DECONTAMINATION PROCEDURES

EQUIPMENT

Decontamination of heavy equipment will be performed at a decontamination station whose location will be determined prior to the start of site activities. Heavy equipment decontamination will involve a high pressure water or steam-cleaning unit within a bermed area. Additional scrubbing may be required to remove encrusted materials. Decontamination of heavy equipment will occur prior to leaving contaminated areas of the site, if possible, as well as at the completion of such equipment's use on site. Rinse water generated will be directed into the aforementioned bermed area and will be collected for proper disposal. Contaminated solid and liquid investigative wastes will be contained for later disposal.

PERSONNEL

Disposable personal protective equipment will be removed at the decon station in the sequence described below, and will be decontaminated and placed in plastic bags for ordinary solid waste disposal. Any eating, drinking, or smoking during active operations is prohibited. Workers must wash their face and hands at the last station of the decontamination procedure.

Non-disposable items shall be removed, washed, and stored according to manufacturer's instructions and prudent practice; and in a sequence as outlined during training courses.

Decontamination procedures are based on each level of protection. See Appendix B for decontamination procedures.

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STANDARD OPERATING PROCEDURES

PERSONAL PRECAUTION

1. Project personnel will be required to read the Site Health and Safety Plan and sign a statement indicating that they have done so. These personnel are given the opportunity to have any questions regarding this plan answered at a pre-project safety meeting.

2. Eating, drinking, chewing gum or tobacco, application of cosmetics, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area of active remediation and at decontamination stations.

3. Contact with contaminated or suspected contaminated surfaces is to be avoided. Whenever possible, do not walk through puddles or discolored surfaces; kneel on ground; or lean, sit, or place equipment on visually stained surfaces.

4. No facial hair which interferes with a satisfactory fit of the mask-to-face seal of a respirator is allowed on personnel required to wear respiratory protection.

GENERAL WORK PRACTICES

1. Personnel on site must use the buddy system when working in Level C or B on this project.

2. Visual contact must be maintained between the workers. Team members must remain in proximity to each other for mutual assistance in any emergency.

3. Special emergency equipment (portable eyewash, fire extinguisher, first aid kits, etc.) will be available on site. These items must be located close to work activities.

4. Any self-contained breathing apparatus (SCBA) or airline respirators used as emergency backup equipment on site will be positive-pressure/pressure-demand.

5. Care will be taken so on site personnel do not suffer physical distress as a result of working under hot or cold weather conditions. This is discussed in full in Appendix A. Guidelines presented in this discussion will be generally followed. Individual physical differences and varying susceptibilities to heat/cold stress will be considered in scheduling work activities. Work schedules need to be adjusted to accommodate the most susceptible worker.

6. The SSO will monitor wind direction and try to orient work activities upwind of contaminant sources.

SPECIFIC WORK PRACTICES

Protection levels may be upgraded/downgraded if environmental monitoring or observed conditions indicate the need for any change in the level of protection due to changing Site conditions. Evaluations of level of protection may be made by the SSO or the Health and Safety Coordinators.

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8

KEY PERSONNEL, RESPONSIBILITIES AND TRAINING

GENERAL

Training of on site personnel will conform with pertinent OSHA regulations including 29 CFR 1910.120. There will be a pre-project Safety Meeting, during which site personnel will be supplied with a copy of the Health and Safety Plan. The SSO will discuss the site, and workers will be instructed in the recognition, avoidance and prevention of unsafe activities and conditions. Emergency practices and procedures will be reviewed.

The SSO will have on site authority and responsibility to change levels of protection in accordance with the guidelines of this document. In addition, the SSO or HSC has authority to shutdown the operations should conditions warrant such action.

PERSONNEL ROLES

Health and Safety Manager (HSM)/Health and Safety Coordinator (HSC)
The HSM is responsible for maintaining proper medical surveillance (including pre-entry and exit examinations, if required), providing hazard communication information, training employees in safe operating procedures, and advising the Project Manager on any matters concerning the health and safety of employees or the public. The HSC may be required to perform various types of area or personnel monitoring for purposes of determining worker exposure and proper selection of personal protective equipment. The HSC should be consulted when any changes in the recommended procedures or levels of protective equipment are made.

Site Safety Officer (SSO)
The SSO is the on site Health and Safety Coordinator. It is the SSO's duty to remain on site during project activities, to maintain site security, and to monitor

compliance with procedures related to health and safety, decontamination, protective equipment, etc.

EMPLOYEE EDUCATION AND TRAINING

Operational employees participate in routine health and safety education and training programs. These programs, directed by the HSM, are designed to provide employees with a thorough knowledge of hazardous materials and health and safety hazard potentials, and to comply with federal OSHA 29 CFR 1910.120(e): 40 hour initial off site instruction, 24 hour on site supervised work, 8 hour refresher training, supervisor's additional 8 hour specialized training, and U.S. EPA requirements. This training includes the following:

- General Safety Rules
- Basics of Chemistry
- Basics of Toxicology/Physiology
- Hazardous Materials (types/characteristics)
- Hazard Communication Information
- Respiratory Protection
- Respirator Training
- Chemical Protective Clothing
- Decontamination Procedures/Personal Hygiene
- Confined Space Work/Safety
- Atmospheric Testing/Sampling Procedures
- Emergency Response Procedures

HEALTH AND SAFETY PLAN TRAINING

This Site Health and Safety Plan is presented and discussed as necessary with the project personnel prior to the project work. This is accomplished at the pre-project site briefing conducted by the SSO.

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9

RESPIRATORY PROTECTION PROGRAM

OSHA requires employers to have in-place a written respiratory protection program (29 CFR 1910.134) which describes the company's standard operating procedures governing the selection and use of respirators.

PERMISSIBLE PRACTICE

Accepted engineering control measures, such as enclosure or confinement of the operation, general and local ventilation or substitution of less toxic materials, are to be used to control breathing air contamination whenever feasible. Breathing air contamination may include harmful dusts, fogs, fumes, mists, gases, vapors or sprays.

When engineering controls are not feasible, or during the time period they are being instituted, appropriate respirators are to be chosen and used in accordance with the guidelines set forth in this section of the Site Health and Safety Plan.

RESPONSIBILITIES RELATED TO RESPIRATORY PROTECTION EQUIPMENT

Warzyn is responsible for establishing and maintaining a respiratory protection program. Warzyn will provide to employees respirators which are applicable for the intended use when it has been determined that such equipment is necessary to protect the health of the employee.

Employees are responsible for using the provided respiratory protection in accordance with instructions given during their training programs.

RESPIRATOR SELECTION AND IDENTIFIED HAZARDS/POTENTIAL HAZARDS

Respirator selection is to be made in accordance with this section of the Site Health and Safety Plan and the manufacturer's guidelines and the American National Standards Institute (ANSI) Practices for Respiratory Protection Z88.2-1969.

RESPIRATOR LIMITATIONS

Air-Purifying Respirators

In order to use an air-purifying respirator, the following conditions must be met:

- Oxygen level must be between 19.5% and 23.5%.
- Atmospheric contaminants must have good warning properties:
  - Can be recognized by taste or smell
  - Odor/taste threshold must be well below permissible exposure limit (PEL) and threshold limit value (TLV)
- Contaminant is not shock-sensitive or water-reactive.
- A chemical cartridge must be available and approved for use with the known contaminants.
- Air contaminant level does not exceed the maximum use concentration (MUC) set by the cartridge manufacturer. While the MUC is specific for each cartridge and is dependent on the type and amount of absorbent, the following MUCs are generally true:
  - 1,000 PPM for organic vapor cartridges
  - 20,000 PPM for organic vapor canisters
  - 50 PPM for hydrogen chloride (acid gas) cartridge
  - 50 PPM for sulfur dioxide (acid gas) cartridge
  - 10 PPM for chlorine (acid gas) cartridge

A partial list of gaseous materials for which air-purifying (chemical cartridge) respirators should NOT be used for respiratory protection regardless of concentrations or time of exposures follows. Should concentrations of any of

these contaminants be expected to exceed one-half of the TLV, use of an air-supplied respirator would generally be indicated.

Acrolein	Hydrogen selenide	Nitroglycerin
Aniline	Hydrogen sulfide	Nitromethane
Arsine	Methanol	Ozone
Bromine	Methyl bromide	Phosgene
Carbon monoxide	Methyl chloride	Phosphine
Di-isocyanates	Methylene chloride	Phosphorous trichloride
Dimethyl aniline	Nickel carbonyl	Stibine
Dimethyl sulfate	Nitro compounds:	Sulfur chloride
Hydrogen cyanide	- Nitrobenzene	Vinyl chloride
Hydrogen fluoride	- Nitrogen oxides	

Chemical cartridges are to be changed at least at the end of each work shift in addition to whenever breathing becomes difficult or breakthrough (i.e., you can taste or smell the contaminant) occurs.

The primary means of identifying chemical cartridges is the wording of the labels. The secondary means of identification is color coding. The following color coding is used:

- Acid gases: white
- Hydrocyanic acid gas: white with 1/2-inch green stripe completely around the cartridge near the bottom
- Chlorine gas: white with 1/2-inch yellow stripe completely around the cartridge near the bottom
- Organic vapors: black
- Ammonia gas: green
- Carbon dioxide: blue
- Acid gases and organic vapors: yellow
- Hydrocyanic acid gas and chloropicrin vapor: yellow with 1/2-inch blue stripe completely around the cartridge near the bottom
- Acid gases, organic vapors and ammonia vapors: brown
- Radioactive materials, except tritium and noble gases: purple (magenta)
- Particulates (dust, fumes, mists, fogs or smokes) in combination with any

of the above gases or vapors: cartridge color for the contaminant as designated above with 1/2-inch gray stripe completely around the cartridge near the top

- All of the above atmospheric contaminants: red with 1/2-inch gray stripe completely around the cartridge near the top

Air-Supplied Respirators

Air-line respirators and self-contained breathing apparatus (SCBA) are two types of air-supplied respirators (ASR). The breathing air is supplied from either a compressor or a compressed gas cylinder. Refer to the section on supplied air quality, found later in this section, for specifications.

Such units are to be operated in the pressure-demand/positive-pressure mode which maintains a slight positive pressure within the facepiece even if a facepiece leak occurs. This prevents contaminants from entering the facepiece.

If an air-line respirator is used in an atmosphere where the level of contaminants is immediately dangerous to life or health (IDLH), an escape bottle with at least a 5-minute air supply is to be used with it. A SCBA is to have an alarm that sounds when there is a 5-minute supply of air remaining in the tank.

RESPIRATORY PROTECTION TRAINING

Respiratory protection will be part of the annual 8-hour refresher training given to the field staff.

Employees are not allowed to wear respiratory protection prior to receiving training in respirator use, selection and maintenance. Such training will include:

- Handling of the various types of respirators to be used
- How a respirator is to be worn
- How to adjust a respirator
- How to determine if a respirator fits properly
- Fit testing (i.e., testing the respirator's face-to-facepiece seal)
- Wearing the respirator in normal air for a period sufficient to become familiar with the equipment

- Wearing the respirator in a test atmosphere

RESPIRATOR STORAGE

Respirators, when not in use, are to be stored in a clean, dry location, out of direct sunlight. They are to be stored in such a manner that the facepiece, seal, and exhalation valves are not distorted during storage, and objects are not placed on top of the respirator.

RESPIRATOR INSPECTION, CLEANING AND MAINTENANCE

Inspection

The following inspection points are to be checked prior to donning the respirator and after each use. Under no circumstances should a respirator which fails this inspection be worn, it is to be repaired or replaced.

- Check to see that the headbands still have their elasticity. Inspect for cracks or tears and check that buckles are in place and working properly.

- Check the facepiece for dirt, cracks, tears, or holes. Inspect the shape of the facepiece for distortion that can occur from improper storage and check that the face seal is flexible, not stiff.

- Check the inhalation and exhalation valves for cracks, tears, distortions, dirt, build-up of material between the valve and valve seat and signs of deterioration or degradation.

- For APRs, check the cartridge holders to check the gaskets are in place. Check the threads for damage and cracks.

- For APRs, be sure the cartridges and filters are clean. Never try to clean a cartridge or filter by washing it or using compressed air. Inspect the cartridge for dents, scratches or other damage that may affect the seal.

- For ASRs, check the backpack and harness assemblies for damage, worn parts and proper function. Check the air line and fittings for signs of damage and proper seal.

- For SCBAs, check the cylinder and cylinder valve assembly, regulator, low-air alarm and high-pressure valve for damage, and proper function. Check the breathing tube for cracks, signs of damage, and good seals.

Respirators that are not routinely used are to be inspected each month to check that they are in good working condition. Those employees to whom a Warzyn respirator has been assigned or who have their own respirator are responsible for completing the monthly inspection in accordance with Warzyn guidelines. The office Health and Safety Coordinators are responsible for seeing that Warzyn pool respirators are inspected monthly in accordance with Warzyn guidelines. Employees with assigned or personal respirators are to provide results of their inspections to the office Health and Safety Coordinator after each monthly inspection.

SCBAs are to be inspected monthly. Air cylinders are to be kept fully charged. Regulator and low-air alarms are to be checked for proper operation.

Records of inspection dates and findings are to be kept by the office Health and Safety Coordinator or designated alternate.

Cleaning

Contaminated respirators are to be cleaned according to routine decontamination procedures, then regular cleaning is to be completed.

- Break down respirator into its component parts.
- For APRs, discard expended filters and cartridges.
- Discard head straps and valves if they are too contaminated to be cleaned, no longer functional or damaged.
- Wash remaining parts in warm water and mild detergent. Scrub parts with a soft brush.
- Rinse remaining parts in clean, warm (120◦F) water.
- Let respirator and its parts air-dry in a clean area.
- Inspect parts and replace, if needed. Re-assemble respirator.
- Wipe the entire respirator with antiseptic solution or wipes.
- For APRs, replace used and expended cartridges with the proper new cartridges.
- Place respirator in plastic bag, seal, and store in designated area.

Maintenance
Respirators are to be kept is good condition to function properly. When any part shows evidence of excessive wear or failure, it is to be replaced immediately with the proper part from the manufacturer. Parts from different makes and models of respirators are not interchangeable.

MONITORING PROGRAM EFFECTIVENESS

Each employee who has been assigned a respirator is to have that respirator inspected at the annual health and safety training. Site health and safety audits are to include checking for the proper use of respiratory protection.

MEDICAL STATUS DETERMINATION AND REVIEW

No employee is to be assigned tasks requiring the use of respirators, unless it has been determined that the employee is physically able to perform the work and use the equipment. The determination of an employee's ability to wear a respirator is part of the baseline, annual, and exit medical examination protocols.

APPROVED/ACCEPTED RESPIRATORS

Only those respirators approved by the Mine Safety and Health Authority (MSHA) or the National Institute of Occupational Safety and Health (NIOSH) are to be issued to and used by Warzyn employees.

SUPPLIED AIR QUALITY

When conditions require the use of ASRs, the minimum quality level which can be used is Grade D breathing air. The specifications for Grade D breathing air are described in Compressed Gas Association Commodity Specification G-7.1-1966 and are summarized below:

- Hydrocarbons, as methane, < 5 PPM
- Carbon monoxide < 20 PPM
- Carbon dioxide < 1,000 PPM
- No odor

- Oxygen level = 20.9% if recompressed air, 19.5% to 23.5% if reconstituted air

Compressed oxygen, liquid air or liquid oxygen are not to be used.

Breathing air may be supplied to respirators by compressed gas cylinders or air compressors.

Compressors that are used to supply breathing air are to be equipped with necessary safety and standby devices. Only breathing air-type compressors are to be used. Compressors are to be constructed and located so as to avoid the entry of contaminated air into the system (e.g., do not place compressor near operating equipment with combustion engines). Suitable in-line air purifying absorbant beds and filters are to be installed to further enhance breathing air quality. Alarms to indicate compressor failure or over-heating are to be installed.

A compressor is to be used in conjunction with a secondary air receiver, such as an escape cylinder worn by the individual, of sufficient capacity to allow the wearer to escape from the contaminated atmosphere in the event of compressor failure.

If an oil-lubricated compressor is used, it is to have a high-temperature alarm and a carbon monoxide alarm.

Couplings specific for air lines are to be used. Such couplings are to be incompatible with outlets for other gas systems to prevent unintentional connection to nonrespirable gases or oxygen.

USE OF RESPIRATORS

Leave the area, follow decontamination procedures and contact the Site Safety Officer if any of the following occur:

- Respirator becomes dislodged.
- An odor, taste or respiratory or throat irritation occurs.
- Air from respirator gets very warm.

When using self-contained breathing apparatus (SCBA) or when there is the possibility of an oxygen-deficient (<19.5%) atmosphere or toxic contaminants of a level that are immediately dangerous to life or health (IDLH), in addition to the employees performing the task, there is to be an attendant. This attendant is to maintain communications - visual, audio or signal line - with employees working in the exclusion zone. The attendant is to remain outside the exclusion zone, in an

area where it is unlikely that the attendant will be affected by an incident in the exclusion zone. The attendant is to have immediately available the necessary rescue equipment to assist the other employee in case of an emergency. Such rescue equipment is not limited to respiratory protection, but may include such items as safety lines, harnesses, hoists, and radio communications.

Employees wearing ASRs are to also wear safety harnesses and safety lines to aid in lifting or removing them from hazardous atmospheres.

An employee is not to be allowed to wear a respirator if any conditions exist which prevent a good face seal. Such conditions include beard, sideburns or other facial hair that projects under the facepiece and temple pieces on glasses. The absence of one or both dentures may also adversely affect the facepiece seal.

Each employee who might be expected to wear a respirator in the course of performing assigned work tasks is to be qualitatively fit tested at least annually using at least two different test atmospheres. Generally isoamyl acetate (banana oil) and irritant smoke are used. Employees are to check the fit of their facepiece, using the positive and negative pressure tests, each time they don the respirator and also prior to entering a contaminated atmosphere.

Those employees wearing corrective lenses are to not wear any style which interferes with the face-to-facepiece seal of the respirator. Examples of appropriate corrective lenses to wear with respirators include glasses with the side-temple pieces removed and optical inserts specifically made for the respirator. Should an employee require optical inserts, such inserts will be supplied by Warzyn.

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MEDICAL SURVEILLANCE PROGRAM

Employees involved with this project work will participate in a medical surveillance program under the direction of an Occupational Physician. This program includes baseline, annual or bi-annual, and exit examinations. The typical annual or bi-annual physical examination protocol includes:

- Comprehensive Health and Exposure History
- Physical Evaluation
- Urinalysis
- Stool Occult Blood
- Blood Chemistry Profile
- Hematology Profile
- Pulmonary Function Testing
- Audiometry
- Vision Testing

In addition, if there is evidence of exceptional occupational exposure, optional medical testing for heavy metals, RCB cholinesterase, serum PCB level, and reticulocyte count are performed with approval of the Health and Safety Manager. Personnel are informed of the results of their medial surveillance exams and are informed of their right to access their medical records.

Additionally, each employee is evaluated to determine if they are physically able to perform work while using respiratory protective equipment in compliance with 29 CFR Part 1910 and ANSI Z88.2 - 1980.

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SITE CONTROL AND SECURITY

Work zones in and around the site will be defined by the SSO prior to the initiation of site activities. If deemed necessary, the overall work site will be delineated into exclusion, decontamination, and support zones. The areas of active work plus a buffer zone will comprise the Exclusion Zones during operations at the site. The size of this buffer zone is to be determined in the field by the SSO. The Decontamination Zone has been identified as previously cited in this plan. Each zone will be clearly defined with physical demarcation devices in accordance with prudent practices and applicable guidelines. Only personnel actively involved in project work will enter these areas during project operations. See map 15268-7 for the location of site activities.

EXCLUSION ZONE

The Exclusion Zone defines the area where contamination is known to exist or potentially exists. Personnel entering the Exclusion Zone must wear prescribed Levels of Protection. An entry and exit check point will be established at the periphery of the Exclusion Zone to regulate the flow of personnel and equipment in and out of the zone, and to verify that entry and exit procedures are followed.

The outer boundary of the Exclusion Zone may need to be delineated (at least in part) by a "hotline", consisting of survey stakes and flagging. This will delineate specifically identified "high hazard" areas such as spill areas, hazardous work areas (e.g., drilling locations), etc. Factors which will be considered in positioning the "hotline" include the distances needed to prevent fire or an explosion from affecting personnel outside the zone, the physical area necessary to conduct site operations, and the potential for airborne dispersal of contaminants from the area. The "hotline" may be modified and adjusted during operations, as more information becomes available.

Based on current information, a site-wide Exclusion Zone is not warranted, and thus will not be established at the site. Exclusion Zones will be established at

any identified "high hazard" areas. Otherwise, Exclusion Zones will generally be restricted to drilling operations encompassing an approximate twenty-meter radius outward from these areas, whenever location permits.

DECONTAMINATION ZONE

The Decontamination Zone includes the area immediately surrounding the Exclusion Zone. This zone lies at the interface of the Exclusion Zone and the Support Zone, and provides for the decontamination of equipment and personnel before crossing into the Support Zone. Contaminated protective equipment, such as respirators, hoses, boots, etc., shall not be removed from the Decontamination Zone. The Decontamination Zone serves as a buffer to further reduce the probability of the clean area (Support Zone) becoming contaminated or being affected by other existing hazards.

SUPPORT ZONE

The Support Zone covers all areas which lie both outside of the Decontamination Zone and within the site boundary. This area is considered to have no significant air, water, or soil contamination, and therefore presents no potential hazard to on site personnel. The Support Zone provides an area for the performance of on site, non-hazardous activities and acts as a staging area for personnel entering the Decontamination and Exclusion Zones.

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CONTINGENCY PLAN

Copies of the following will be kept in the field operations vehicle.

EMERGENCY ACTION - STANDARD OPERATION PROCEDURES

- Name, address, and telephone number of the nearest medical treatment facility will be conspicuously posted. A map and directions for locating the medical facility will be readily available.

- Telephone numbers and procedures for obtaining ambulance, emergency, fire, and police services will be conspicuously posted.

- An emergency eye wash fountain and first aid equipment shall be readily available on site.

- The SSO will inform the local medical facility before site operations commence. The SSO will give the medical facility general information of on site chemical hazards that may be encountered, as well as site location and time and dates of work activities.

- The SSO will notify the local fire department of possible site contaminants and site operations.

- Every attempt to rapidly identify substances to which the worker has been exposed shall be made. This information will be given to medical personnel in the event of an emergency.

- Procedures for decontamination of injured workers and preventing contamination of medical personnel, equipment, and facilities shall be communicated to workers.

MEDICAL EMERGENCIES

Any person who becomes ill or injured in the exclusion zone must be decontaminated as soon as possible, giving consideration to which risk will be greater, the spread of contamination or any potential health effects of the individual. If the person is stable, decontamination should be completed and first aid administered as needed prior to transport. If the person's condition is unstable, gross decontamination is to be completed, if necessary (i.e., removal of PPE) prior to administering first aid, to prevent injury to responder. The SSO will be trained in first aid and CPR. First aid is to be administered while awaiting an ambulance or paramedics, as appropriate to the injury. Refer to the Emergency Decontamination procedure, found in Appendix B for details.

Anyone being transported to a clinic or hospital for treatment should have available to them information on any potential chemical(s) to which they could have been exposed to at the site, along with their medical history. Any vehicle used to transport contaminated personnel, should be tested and cleaned as necessary.

GENERAL ON SITE FIRST AID

The following discusses general on site First Aid procedures for exposure to contaminants on site:

- Contaminant Material in Eyes - Wash with copious amount of water for at least 15 minutes. Lift upper and lower lids occasionally. Seek medical attention immediately (eye wash will be available on site).

- Contaminated Materials Contact Skin - Promptly wash the area with soap or mild detergent and water for organics; just use water, do not rub, for corrosives. Flush well with water for at least 15 minutes. Check for signs of skin irritation. Seek medical attention if unusual appearance of skin or sensation is noted.

- Contaminant Materials Penetrate Protective Clothing - Discard protective clothing and underlying clothing. Wash skin as described above. Confer with SSO in selection of new protective clothing.

- Inhalation of Contaminated Air - Move person to a well ventilated area at once. If the individual is not noticeably affected and has no side affects after about 15 minutes, returning to work is allowed, provided the work area is no longer contaminated. If the individual has not fully recovered, continue to monitor for 15 to 20 additional minutes and seek medical attention, if necessary. Use artificial respiration, if breathing has stopped.

In such instances, seek medical attention after the victim has resumed breathing. If possible, have someone seek medical attention while the person is being resuscitated.

- Ingestion of Contaminated Materials - If conscious, flush the mouth with water, being careful not to swallow. Contact the local poison center (see telephone number in Emergency Response and Information section). When called for, induce vomiting by physical means or syrup of ipecac (**DO NOT** induce vomiting in unconscious persons). Seek medical attention promptly.

If at any time, a worker feels fatigued, dizzy, nauseous, or experiences headaches, the worker is to be moved to a well-ventilated area and allowed to rest for 15 to 30 minutes. If symptoms do not subside, seek medical attention.

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EMERGENCY RESPONSE AND INFORMATION

ON SITE COMMUNICATION SYSTEM

On site communication procedures will be established in the field during the initial site briefing or whenever there is a change of site personnel. Emergency signals will be designated and discussed during this initial briefing. Employees will be made aware of routes of egress and assembly points to be used in the event of an emergency. A telephone will be accessible to site personnel during project field activities defined under the scope of work. In addition, vehicle horns or other means will be used to notify personnel of on site emergency situations. Communication in the event of a site emergency will be determined by the SSO. Personnel will leave the site by the most expeditious route and will assemble at a location designated by the SSO in the initial site health and safety briefing.

WORK SITE EMERGENCY PROCEDURES

In the event of a medical emergency at a work site, personnel will act quickly and reasonably to remedy the situation. The SSO shall give directions as to how to proceed. If the SSO is incapacitated by an injury, or is otherwise unable to respond, an appropriate local emergency response agency will be contacted.

Special care will be taken if rescue efforts are necessary. Personnel shall utilize extreme caution and take steps to be as adequately protected as possible, before attempting such rescue.

EMERGENCY EQUIPMENT

The following emergency equipment shall be maintained at the contamination reduction zone or in the operations vehicle:

- Fire Extinguisher
- Portable Eyewash
- First Aid Kit - Approved by a consulting physician and meeting the requirements of 29 CFR 1926.50.
- 5 Gallons of Fresh Water (for flushing of skin, general washing)

Resources

Services Organization	Location	Phone Number
Hospital: Beloit Memorial	1969 West Hart Road	608-364-5011
Clinic: Blackhawk Clinic	1701 Blackhawk Boulevard	815-389-2268
Fire Department	Rockton	815-624-4341 (outside telephone line) 7999 (inside facility telephone line)
Poison Control Center	Madison	608-262-3702
Police	Rockton	815-624-4351 7999 (inside facility telephone line)
Rescue/Ambulance	Rockton	815-624-4341 7999 (inside facility telephone line)
CHEMTREC		800-424-9300
Warzyn		
H&S Manager - Erik Goplin	Warzyn	608-231-4747 (Home) 608-437-4879
H&S Coordinator - Michael Kierski	Warzyn	608-231-4747 (Home) 608-544-4302
Project Manager - Kevin Domack	Warzyn	608-231-4747
Warzyn Site Safety Officer - Jeff Ramsby	Warzyn	608-231-4747
Beloit Corp. Health & Safety Administrator - David Kessler	Beloit	608-364-7654 (outside telephone line) 7654 (inside telephone line)

Hospital Route

Drawing 15268-B1, which can be found at the end of this section, shows the route from the site to Beloit Memorial Hospital. From the site, proceed to Blackhawk Boulevard and turn left (north)(Blackhawk Clinic is directly across from the site on Blackhawk Boulevard and can be used for routine medical attention). At the intersection of Blackhawk Boulevard and Pleasant Street turn onto Pleasant Street and proceed north. Pleasant Street becomes U.S. 51. At the intersection of U.S. 51 and Elmwood Avenue, turn right on Elmwood and proceed to Prairie Avenue. Turn left on Prairie Avenue and proceed two blocks. Beloit Memorial Hospital is on the right at 1969 West Hart Road.

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NAMES AND SIGNATURES

Employees working on or visiting this site are to sign below, indicating that they have read the Warzyn Site Health and Safety Plan (SSP) and Beloit Corporation Health and Safety Plan (refer to Appendix C), understand their contents, have been given opportunity to discuss their contents with the Warzyn and Beloit Corporation Site Safety Officer's (SSO) and agree to abide by their requirements.

The supervisors of all sub-contractors working under these SSPs are to sign below, indicating that they have read these SSPs, understand their contents, have been given opportunity to discuss their contents with the SSOs and agree to abide by their requirements and enforce compliance with the SSPs among their work crews.

Date	Name	Employer	Title	Signature

Date	**Name**	**Employer**	**Title**	**Signature**

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HEALTH AND SAFETY STANDARD OPERATION PROCEDURE TEMPERATURE STRESS

HEALTH AND SAFETY
STANDARD OPERATION PROCEDURE

Temperature Stress

Control Measures, Signs and Symptoms,
and First Aid for Cold and Heat Stress

January 1991

COLD STRESS

COLD STRESS REDUCTION

The following engineering controls are recommended for reduction of cold stress:

- Use general or spot heating to increase temperature at work site if this does not create a hazardous situation.
- Shield work area from wind.
- Cover metal handles of tools and equipment with thermal insulating materials.
- Do not sit on unprotected metal chair seats.
- Use heated rest areas if work is to be performed in an equivalent chill temperature of 20°F or below.

The following work practice controls are recommended to reduce cold stress:

- Develop and adhere to a work-rest schedule, using the guidelines at the end of this section.
- Drink warm, caffeine-free, sweet, non-alcoholic drinks or soup frequently.
- Schedule work for warmest part of the day.
- Use heated rest areas regularly.
- Use the buddy system. Do not work alone. Observe your co-workers for signs and symptoms of cold stress.
- Allow and encourage workers to pace themselves and take extra breaks when needed. The work schedule should be set by the person most susceptible to cold stress. Do not pressure someone to work beyond their capabilities.
- Whenever possible, allow new workers time to adjust to working in a cold environment before working full time. Ideally, acclimation should occur over five days: 20% Day 1 with a 20% increase on each successive day.
- When possible, arrange the work to minimize standing or sitting still for long periods of time.
- Reorganize work procedures so as much of a job as possible can be done in a warm environment.

- Avoid overtime.
- Remove outer layer of clothing when entering warm shelter.
- If clothes are wet, change to dry work clothes before returning to work in cold. If not possible, loosen clothing to facilitate evaporation of sweat.

SIGNS AND SYMPTOMS OF COLD STRESS

Send a worker to warm shelter immediately if any of the following symptoms are noted:

- Heavy shivering.
- Frostnip (skin turns white).
- Feeling of excessive fatigue.
- Drowsiness.
- Euphoria.

FIRST AID

Take victim to a warm area. Remove the outer layers of clothing. Gently warm the affected area, submerge it in tepid water if possible but do not rub. If there is evidence of frostbite, obtain medical attention immediately.

TABLE 1

COLD STRESS WORK/WARM-UP SCHEDULE

Air Temperature with Sunny Sky (degrees F)	Work/Break Schedule (minutes) no wind	5 MPH wind	10 MPH wind	15 MPH wind	20 MPH wind
-05 to -09	110/10	110/10	75/10	55/10	40/10
-10 to -14	110/10	75/10	55/10	40/10	30/10
-15 to -19	75/10	55/10	40/10	30/10	cease
-20 to -24	55/10	40/10	30/10	cease	cease
-25 to -29	40/10	30/10	cease	cease	cease
-30 to -34	30/10	cease	cease	cease	cease
-35 & below	cease	cease	cease	cease	cease

NOTE These recommendations and guidelines are adapted from Threshold Limit Values and Biological Exposure Indices for 1990-1991, published by the American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

NOTE 05 MPH wind - light flag moves, 10 MPH wind - light flag fully extended, 15 MPH wind - raises newspaper sheet, 20 MPH wind - blowing and drifting snow

Table 1 addresses the health hazards related to cold weather work. The practicality of working under a work-rest schedule, together with the ability of the necessary equipment to function properly in cold weather, may be more restrictive that the health hazards and also need to be considered.

Cold stress schedule applies to light or sedentary work activities. Light to moderate work activities can be moved down one level, moderate to heavy work activities can be moved down two levels if workers are acclimated, have proper protective clothing and show no signs of cold stress.

TABLE 2

ACTIVITY/METABOLISM RATE ESTIMATES

Work Classification	Activity	Metabolic Rate (kCal/HR)
light	typing	113 to 140
	driving car	140 to 160
moderate	walking with lifting/pulling	250 to 350
heavy	pick/shovel work	380 to 500

HEAT STRESS

HEAT STRESS REDUCTION

While site specific conditions need to be considered, the following guidelines are recommended to prevent or reduce the effects of heat stress.

- Develop and adhere to a work-rest schedule using the guidelines at the end of this section.
- Take breaks in cool areas.
- Drink fluids hourly. The fluids should be caffeine-free and non-alcoholic. Do no wait until you are thirsty. Your normal thirst mechanism is not sufficient to overcome the effects of dehydration. If you feel thirsty, you are already becoming dehydrated.
- Schedule work for the cooler part of the day -- early morning and/or early evening.
- Allow and encourage workers to pace themselves and take extra breaks when needed. The work schedule should be set by the person most susceptible to heat stress. Do not pressure someone to work beyond their capabilities.
- Whenever possible, allow new workers time to adjust to working in a hot environment before working full time. Ideally, acclimation should occur over five days: 20% Day 1 with a 20% increase on each successive day.
- Avoid overtime.
- Use the buddy system. Never work alone and watch your co-workers for signs of heat stress.

PERSONAL MONITORING

At each work break, count your pulse during a 30 second period as early as possible in the rest period.

- If your heart rates exceeds 110 beats per minute (BPM) at beginning of rest period, shorten your next work cycle by 1/3 and keep the rest period the same.
- If your heart rate still exceeds 110 BPM at next rest period, shorten the following work cycle by 1/3.

At the beginning and end of each work shift, measure your weight, $\pm$ 0.25 LB, wearing similar clothes. You should not loss more than 1.5 % of your total body weight in a work day. If you do, drink fluids to compensate and to prevent dehydration.

SIGNS AND SYMPTOMS OF HEAT STRESS

Heat rash

Heat cramps

- Muscle spasms
- Pain in hands, feet or abdomen

Heat exhaustion

- Pale, cool moist skin
- Heavy sweating
- Dizziness
- Nausea
- Fainting

Heat stroke

- Red, hot, usually dry skin
- Lack of, or reduced, perspiration
- Nausea
- Dizziness, confusion
- Strong, rapid pulse
- Coma

FIRST AID

Remove the affected individual's protective clothing and equipment. Dowse the victim with water. Wrap the victim in wet towels or clothing. If there are signs or symptoms of heat exhaustion or heat stroke, get medical attention immediately.

TABLE 3

HEAT STRESS MONITORING SCHEDULE (MINUTES)

Adjusted Temperature* (degrees F)	Normal Work Clothes	Impermeable Work Clothes
above 90	45	15
88 to 90	60	30
83 to 87	90	60
77 to 82	120	90
72 to 78	150	120

*: Adjusted temperature = measured temperature + (13 x % sunshine)

NOTE These recommendations and guidelines are adapted from Threshold Limit Values and Biological Exposure Indices for 1990-1991, published by the American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

Table 3 applies to moderate work levels. For heavy work levels, apply monitoring schedule one level lower. Light to sedentary work activities can be moved up one level if workers are acclimated and show no signs of heat stress.

TABLE 4

ACTIVITY/METABOLISM RATE ESTIMATES

Work Classification	Activity	Metabolic Rate (kcal/hr)
light	typing	113 - 140
	driving car	140 - 160
moderate	walking with lifting/pulling	250 - 350
heavy	pick/shovel work	380 - 500

MAL/mal/MAL/H&SPC
[SAFETY:SOPS Temperature Stress]

B

HEALTH AND SAFETY STANDARD OPERATION PROCEDURE DECONTAMINATION

HEALTH AND SAFETY
STANDARD OPERATION PROCEDURE

Decontamination

Guidelines for Decontaminating Persons and Equipment in an Emergency and Under Routine Operating Conditions

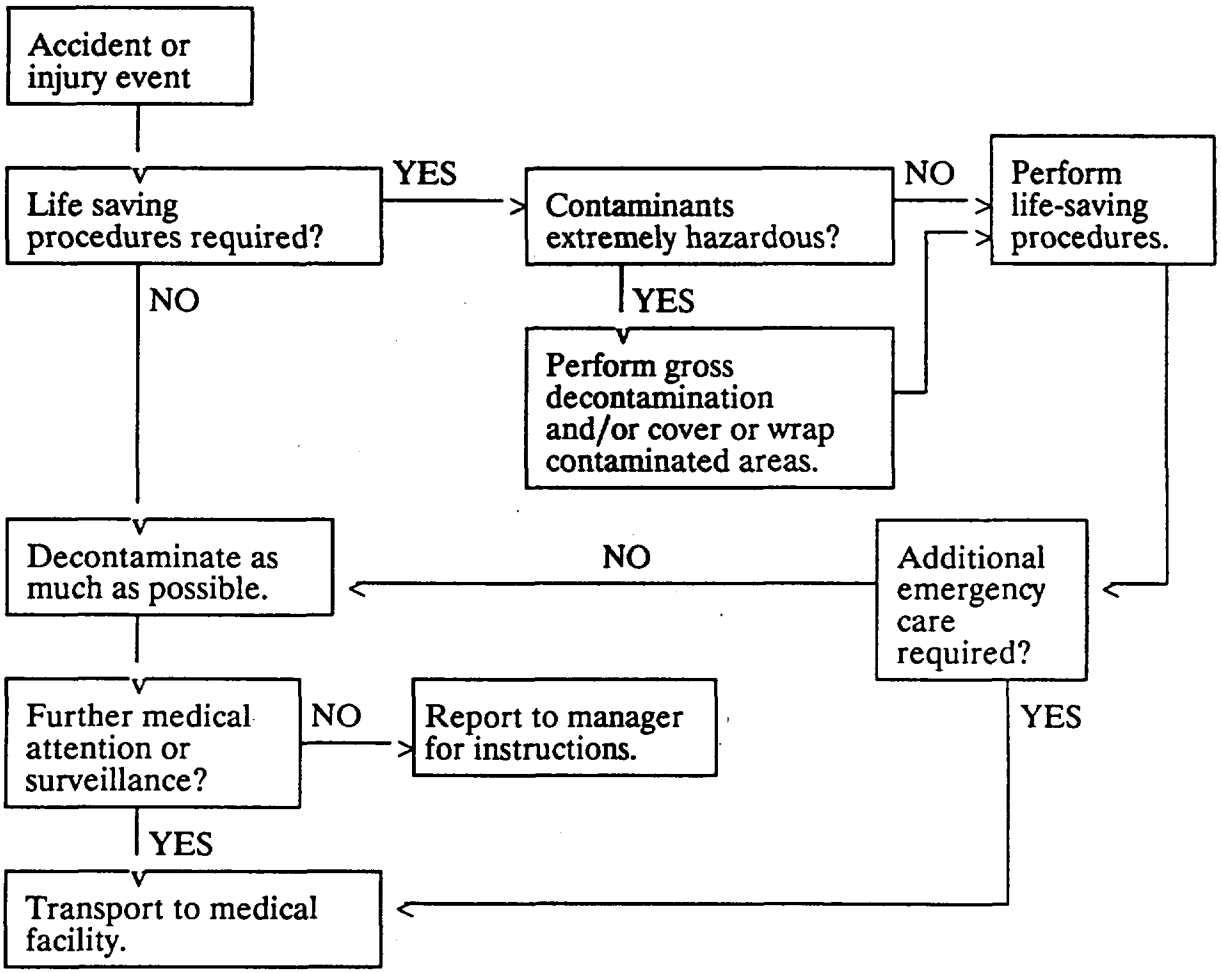
January 1991

EMERGENCY DECONTAMINATION

The need for emergency decontamination of an individual may arise as the result of:

- Injury or illness
- Overexposure to chemicals or hazardous substances
- Temperature stress

Primary consideration needs to be given to life-preservation actions and the minimization of additional harm or health risks to the individual in the emergency situation and the rescuing individuals.



LEVEL B
ROUTINE DECONTAMINATION

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

Scrub outer boots/gloves with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

OUTER GARMENT REMOVAL

If using self-contained breathing apparatus (SCBA), remove SCBA back pack and remain on air as long as possible. Remove chemical-protective outer garments and deposit in the appropriate container.

RESPIRATORY PROTECTION REMOVAL

Remove hard hat and face piece, and deposit on a clean surface. Wash and rinse hard hat and face piece. Wipe off and store face piece in a clean, dry location.

INNER GLOVE REMOVAL

Remove inner gloves and deposit in the appropriate container for disposal.

FIELD WASH

Thoroughly wash hands and face with soap and water. Shower as soon as possible.

LEVEL B
DECONTAMINATION FOR AIR TANK EXCHANGE

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

Scrub outer boots/gloves with decontamination solution then rinse using water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves not disposable, store them in a clean, dry place.

TANK CHANGE

Exchange air tank. Don new outer boots/gloves. Tape joints and return to exclusion zone.

LEVEL C
ROUTINE DECONTAMINATION

EQUIPMENT DROP
Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE
Scrub outer boots/gloves and/or splash suit with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL
Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

OUTER GARMENT REMOVAL
Remove chemical-protective outer garments and deposit them in the appropriate container.

RESPIRATORY PROTECTION REMOVAL
Remove hard hat and respirator and deposit them on a clean surface. Discard respirator cartridges in the appropriate container. Wash and rinse hard hat and respirator. Wipe off and store respirator in a clean, dry location.

INNER GLOVE REMOVAL
Remove inner gloves and deposit them in the appropriate container for disposal.

FIELD WASH
Thoroughly wash hands and face with soap and water. Shower as soon as possible.

LEVEL C
DECONTAMINATION FOR RESPIRATOR-CARTRIDGE EXCHANGE

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

Scrub outer boots/gloves and/or splash suit with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit in them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

RESPIRATOR CARTRIDGE CHANGE

Exchange respirator cartridges. Don new outer boots/gloves. Tape joints and return to exclusion zone.

LEVEL D-MODIFIED
ROUTINE DECONTAMINATION

EQUIPMENT DROP

Deposit equipment used on site (tools, sampling devices, monitoring equipment, radios, etc.) on plastic drop cloths. Decontaminate or dispose of items before removal from exclusion zone.

OUTER BOOT/GLOVE WASH AND RINSE

(Optional, include if necessary for gross decontamination)
Scrub outer boots/gloves and/or splash suit with decontamination solution then rinse with water.

OUTER BOOT/GLOVE REMOVAL

Remove outer boots/gloves:

- If outer boots/gloves are disposable, deposit them in the appropriate plastic-lined container.
- If outer boots/gloves are not disposable, store them in a clean, dry place.

OUTER GARMENT REMOVAL

Remove chemical protective outer garments and deposit them in an appropriate container. Remove hard hat and safety glasses. Decontaminate them as necessary and deposit on a clean surface.

INNER GLOVE REMOVAL

Remove inner gloves and deposit them in the appropriate container for disposal.

FIELD WASH

Thoroughly wash hands and face with soap and water. Shower as soon as possible.

C

BELOIT CORPORATION
CONTRACTOR SAFETY HANDBOOK

Contractor Safety Handbook

BELOIT CORPORATION

To: Outside Contractors & Subcontractors

The Beloit Corporation places a very high priority on the safety and health of its employees. This safety and health philosophy also applies to any outside firm retained to do work or provide services to the Beloit Corporation. We require our employees to work safely and we have the same expectation of non-employees performing services on our property.

The Beloit Corporation Safety Departments and Project Managers are available to assist you in complying with our safety policies and procedures while working at our facilities. The attached packet of safety information will familiarize you with the safety requirements that must be adhered to while working at the Beloit Corporation. The information will be explained in detail during your initial visit to the Beloit Corporation, and prior to work actually commencing. We encourage a free exchange of information during that meeting, and if you have any special needs or concerns relating to safety, they should be addressed at the initial conference, or as soon as possible. If, during your construction project, you should have any questions relating to safety, please call one of the following telephone numbers for assistance:

- PAPER MACHINE DIVISION: David Kessler, Health & Safety Administrator (608) 364-7654
- CASTINGS DIVISION & CORPORATE: Pat Kempinski, Health & Safety Administrator (608) 364-7697

The Safety Departments of the Beloit Corporation welcome the opportunity to assist you in any way possible. We look forward to a safe and healthful working relationship.

Sincerely,

Beloit Corporation
Safety Departments

All outside contractors and their sub-contractors are required to comply with all Federal and State laws such as OSHA regulations when performing work on Beloit premises and further to comply with specific Beloit Corporation safety rules.

Construction being done in areas where plant operations are in progress must be coordinated with Plant Management on a day-to-day basis.

While not intended to be an all inclusive list of such rules and regulations, the following items should be considered as appropriate guidelines which must be followed.

Beloit Corporation Emergency Number	
Emergency	7999

Non-Emergency Numbers	
Security	7196
Safety Department	7697
	7654
	7515

TABLE OF CONTENTS

I. EMERGENCY MEDICAL SERVICE

A. Beloit Corporation policy on medical treatment of contractors is as follows:

1. All contractors are required to make their own arrangements as to which medical facility they will be using to treat injured employees.
2. Information on local medical facilities and physicians can be provided upon request.
3. Contractors will provide all necessary first aid supplies.

B. To report a fire, medical emergency, down electrical line, chemical spill, or other emergency requiring assistance, follow the procedure below.

1. Go to the nearest telephone (not pay phone) and dial "7999".
2. Give the security officer answering the telephone the following information:
   A. Your name.
   B. Telephone extension and plant area calling from.
   C. Exact nature and type of emergency (i.e., fire, injured personnel, etc.)
   D. Exact location. (Refer to door number if possible.)
3. Stay on the telephone until released by the security officer. The proper emergency personnel will respond immediately.

Name _____

Title _____

Date _____

II. BELOIT CORPORATION PROGRAMS

A. **LOCKOUT/TAGOUT PROCEDURES.** The purpose of Zero Energy State (ZES)/lockout procedures is to prevent unexpected or unwanted activation of equipment or processes during activities such as installing, erecting, maintaining, inspecting or troubleshooting. Contractors must work with the facility personnel when de-energizing equipment.

1. All hazardous energy sources with electrical, chemical, thermal, pneumatic, hydraulic and mechanical potential must be locked or secured prior to performing work activities.
2. Individual locks must be used to secure energy-isolating devices (circuit breaker, disconnect, valve, blind, etc.). Locks must be individually keyed for each contractor employee, and proper identification with the employee's name and identification number must be affixed to the lock by an engraved metal tag or a "Danger - Do Not Operate" tag.
3. All sources of energy must be isolated using an energy-isolating device or by physical separation. For electrical equipment, isolation of control circuitry only is not acceptable control.
4. All contractor employees working on a process or piece of equipment must affix their personal locks to the energy-isolating device. Locks may be removed only by the individuals applying them. The contractor must make provisions acceptable to the facility contract coordinator to allow removal of locks of employees who are unable to remove their own lock.
5. During major shutdowns, modification or production outages where a large number of employees will be working on the equipment or process, it is acceptable for each contractor crew supervisor to lock the energy-isolating devices. The contractor supervisor locks out in lieu of individual employees locking out. Contractor management must make provisions for

accounting for employees protected by the supervisor's lockouts.

6. Energy control must be verified before working on equipment or processes. An attempt to start the equipment or the use of measurement instruments are examples of verification.
7. All lockout devices are to be removed promptly after work has been completed.

Name _____

Title _____

Date _____

TYPES OF LOCKOUT DEVICES

B. **HOT WORK POLICY**

Before cutting, burning or welding is done by the contractor's employees, a clearance and permit must be obtained at Beloit Security.

1. No cutting or welding to be permitted:
   A. While Sprinklers are out of service.
   B. In presence of flammable lint, dust, vapors and liquids or unpurged tanks and equipment previously containing such materials.
   C. In an area or on equipment other than that specified on permit.
2. Any hazardous operation that will be exposed by this hot work should be shut down. If piping of flammable gases or liquids is to be exposed, then this material should be removed and the piping purged of the flammable material.
3. Before cutting or welding operations are started, the area must be personally examined and approved by the Safety Department, or designated representative and necessary safeguards arranged for prior to issuing permit.

A. Always assign responsible person to watch for dangerous sparks in area as well as in floors above and below.

B. Always provide at least one portable fire extinguisher. If combustibles are exposed, then a charged fire hose should be laid in the area.

C. Cover over tightly any floor or wall openings within 40 ft. of operations.

D. Relocate all combustibles 30-40 ft. from operations if possible. Completely protect remainder with appropriate curtains, metal guards or flame-proofed covers (not ordinary tarpaulins.)

E. Sweep floors clean and wet down floors and surroundings if combustibles are exposed.

4. Patrol area including floors above and below during any lunch or rest period, and for at least 1/2 hour after work is completed.
5. Cutting and welding equipment should be maintained in good repair.
6. The permit is valid for one shift only and remains valid only if the safe conditions under which it was approved do not change.
7. A fire watch, knowledgeable of fire protection equipment and procedures, must be present with a fire extinguisher and/or fire hose when hot work is being performed. Follow the facility requirements for fire protection equipment.
8. The fire watch must remain in the area for at least 30 minutes after all burning and welding has been completed.
9. Copies of the burning and welding permit can be obtained from the facility contract coordinator or Security Department.
10. Cylinders must be secured in a vertical position with valve caps in place.
11. Oxygen cylinders in storage must be kept at least 20 feet away from fuel cylinders or separated by a non-combustible barrier at least five feet high and having a fire resistance rating of at least 30 minutes.

(**NOTE:** Sample copy of cutting a welding permit follows:)

Name _____

Title _____

Date _____

CUTTING & WELDING PERMIT

(For use when Hot Work is conducted out of designated Cutting & Welding areas).

Hot work should not be conducted until the listed precautions and the job site have been reviewed by a person with authority to approve or disapprove the job. After authorization, the tag should be signed and placed on the machine being used. Completed tags should be sent to the Security Dept.

Date _____ Time Started _____ Completed _____

Location (building, floor, occupancy of area) _____

_____

_____

_____

Work to be done _____

_____

_____

Welder's Name _____

Fire Watch Name _____

Permit Expires _____

Job Authorized by _____
Name & Title

C. CONFINED SPACE/VESSEL ENTRY PROCEDURES

When work performed at Beloit Corporation requires entry into confined spaces, as defined by OSHA, appropriate confined space entry procedures shall be adhered to. Confined space entry training shall be provided by the contractor for its employees. Proof of appropriate training shall be provided to Beloit Corporation. The contractor performing confined space entry work shall provide all appropriate confined space entry equipment and monitoring devices.

1. A confined-space (vessel) entry permit must be obtained from the facility contract coordinator before personnel can enter tanks, vessels, sewers or any other confined space.
2. Before a permit is issued, the following precautions must be taken:
   A. The confined space must be emptied and cleaned.
   B. All equipment must be in a state of zero energy. The equipment must be locked, and a tag placed at the energy control device.
   C. Isolation of the confined space must be discussed with the facility contract coordinator prior to entry.
   D. Atmospheric testing must be performed.
   E. The confined space must be ventilated.
3. An observer must be stationed at the confined-space entrance during the period that personnel are in the confined space. This individual is to maintain communications with personnel in the confined space and summon help if an emergency occurs. The observer must not attempt to enter the confined space until help arrives.
4. Permits are only valid for one shift.
5. The permit must be posted at the confined-space entrance. Any special precautions or protective equipment requirements will be specified on the permit.
6. Electrically powered tools and lighting used in confined spaces must be connected to a ground-fault circuit interrupter (GFCI).
7. It is the responsibility of the contractor supervisor to obtain the confined space entry permit. Contact the facility contract coordinator for a copy of the permit and facility procedures.

(**NOTE:** Sample copy of confined space entry permit follows.)

Name _____

Title _____

Date _____

Use form provided

III. HAZARD COMMUNICATION PROGRAM

1. Contractor management will be informed by the facility contract coordinator of the availability of material safety data sheets (MSDS), details of in-plant labeling systems and protective measures that can be taken while performing on-site work. This briefing must be conducted prior to starting any project.
2. Contractor management must inform the facility contract coordinator of any hazardous conditions resulting from on-site contractor operations conducted at the facility.
3. PRIOR TO WORK, contractor management is required to submit MSDS on chemicals and flammables brought into the facility and inform the facility of any hazards associated with the chemicals and flammables and their use. The integrity of labels on containers used on the work site must be maintained by contractor personnel.
4. Contractor management is required to attend training sessions given by the facility to cover hazards their employees may be exposed to and steps personnel can take to protect themselves.
5. Contractor management is required to train their employees on material presented by the facility. The training must be documented to include names of attendees and made available for facility personnel review.
6. Contractor employees must be knowledgeable of appropriate work practices, emergency procedures and personal protective equipment when working with hazardous chemicals.
7. Contractor employees must be familiar with the facility's emergency evacuation plans.
8. All spills must be reported to one of the following people: Doug McLeish - 7583, Russ Hebb - 7629, PMD; Cris Proctor - 7848, Casting-Foundries. If contact cannot be made with proper person, call Plant Security - 7196.
9. All hazardous material must be removed from site upon completion of project.

Name _____

Title _____

Date _____

IV. HOUSEKEEPING

1. Housekeeping at Beloit Corporation is the responsibility of each individual and housekeeping hazards will not be tolerated.
2. Keep work area in a neat and orderly manner.
3. Keep exits and emergency escape routes unobstructed.
4. Dispose of cigarette stubs in butt cans.
5. Store and contain materials so that the area is fire safe.

Name _____

Title _____

Date _____

V. PERSONAL PROTECTION EQUIPMENT

CONTRACTORS MUST FURNISH ALL SAFETY EQUIPMENT AND TRAINING TO THEIR EMPLOYEES.

All protective equipment must meet OSHA Standards and must be worn in compliance with such standards.

A. HARD HATS - Required in all operating areas of the foundries, all construction sites and all other areas where overhead hazards exist.

B. SAFETY GLASSES WITH SIDE SHIELDS - Required in all operating areas of the plant. Side shields must be a hard plastic ANSI/MIOSHA approved style. Planos with hard side shields must be worn over non-safety prescription glasses. Contact lenses are not permitted in the plant.

C. HEARING PROTECTION - Required in all operating areas of the foundries and certain areas of all plants. Inquire about the area the work is to be performed in.

D. HAND PROTECTION

1. Gloves shall be worn by all employees when handling rough, sharp-edged, abrasive material, or where work subjects the hands to lacerations, punctures, burns or bruises. Gloves shall not be worn around saws, lathes, drills, presses and similar machinery in which the gloves are likely to become entangled.
2. Special gloves are required for work with solvents, chemically-treated material and corrosive chemicals.
3. Di-electrically tested rubber gloves are to be used on all power line work and where there is possible contact with energized circuits, in such work as concrete breaking, drilling, excavation, etc. Always inspect visually before using.

E. FOOT PROTECTION

1. Steel toe shoes/boots
   ANSI-approved safety shoes or boots should be worn at all times. Most facilities require that safety shoes be worn. Contact the facility contract coordinator for facility requirements. At a minimum, sturdy leather work shoes or boots are required.
2. Steel toe shoes or boots - or toe guards - must be worn when using jack hammers, tampers and similar equipment.
3. Rubber boots with safety toe protection are to be used on jobs subject to contact with hazardous chemicals.

All protective equipment must meet OSHA Standards and must be worn in compliance with such standards.

F. FALL PROTECTION

1. ANSI approved fall protection is required to be worn when working on:
   A. Sloping roofs
   B. Flat roofs without handrails within four feet of the edge or roof opening.
   C. Any suspended platform or stage.
   D. Elevated work areas greater than six feet unless employees are protected from falling by standard handrails.
   E. All steel erection.
2. The use of safety harnesses is mandatory in a situation where a fall would result in the per-

son being caught by the lanyard.

3. Safety belts are acceptable where the lanyard is being used to keep the person from falling and would not be used to catch the person.
4. Safety belts, harnesses and lanyards must be inspected prior to each use. In case of excessive wear, chemical deterioration or heat exposure, the device must be replaced.
5. Where it is impractical to use scaffolds, safety belts, ladders, vehicle mounted elevating and rotating work platform, safety nets will be suspended below points where persons are working.

G. RESPIRATORY PROTECTION

Respirators are to be worn when working with or exposed to gases, fumes, vapors or dust above the OSHA-permissible exposure limit (PEL) or when an oxygen-deficient atmosphere exists.

1. Respirator users must be trained in use, selection, maintenance, storage and inspection prior to use. It is the responsibility of contractor management to train its employees.
2. Respirator users must have a fit test conducted prior to wearing a negative pressure respirator. It is the responsibility of the contractor to conduct the test.
3. Respirators must be cleaned and stored properly.
4. Do not wear a respirator when anything comes between the face seal and user's face, such as facial hair, head cover protruding under the seal or temple pieces on glasses.

Name _____

Title _____

Date _____

VI. FIRE PROTECTION

Contractors shall assure that an adequate supply of extinguishers is present in the area of any hazardous operation which will be performed and shall contact Beloit Management if additional extinguishers are required.

A. ALARM/NOTIFICATION SYSTEMS

1. Discuss with the facility contract coordinator the proper way of responding to a fire and turning in an alarm in the event of a fire.
2. Report any fire immediately through the facility fire emergency notification system.
3. Ensure that personnel are familiar with the facility's emergency exit routes and assembly points for a head count. Familiarize personnel with audible alarm signals. (Maps attached.)

B. SMOKING REGULATIONS

1. Smoking is permitted in approved areas only. Check with the facility contract coordinator regarding approved smoking areas.
2. Smoking is not permitted in the facility office areas, computer rooms, electrical distribution areas or where otherwise posted.
3. Smoking is not permitted within 50 feet of any flammable liquid or gas storage area.

C. FLAMMABLE/COMBUSTIBLE LIQUIDS

1. Flammable liquids must be stored in a building, cabinet or area remote from general access or traffic. The storage area must be properly identified. No smoking, matches, open flames

or other ignition sources are permitted within 50 feet of the storage area.

2. Flammable liquids stored inside a building must be in an approved flammable-liquid storage cabinet supplied by the contractor.
3. Flammable liquids shall be stored, covered, in their original container or in safety cans.
4. Drum dispensing installations must be provided with grounding and bonding safeguards. A self-closing valve must be used during dispensing.
5. A fire extinguisher must be readily accessible in an area where flammable and combustible liquids are stored or handled. All contractors shall be responsible for the proper training of their employees in the use of their fire extinguishers.
6. Extinguishers in place at Beloit facilities shall not be blocked or covered in any manner.
7. Trash, rags and other materials contaminated with flammable liquids are to be disposed of daily in a separate metal container with a lid.

Name _____

Title _____

Date _____

VII. JOB SITE PROCEDURES

A. EXCAVATIONS

1. Excavations and trenches must be barricaded to protect pedestrians and vehicles. All excavated material must be piled at least three feet back from the edge of the excavation.
2. All walls and faces of trenches that are greater than five feet deep must be shored or sloped to eliminate the hazard of cave-in.
3. A ladder for employee exit and access must be provided. An employee working in the trench must not have to walk more than 25 feet to gain access to the ladder.
4. The air in the trench is to be tested prior to entrance when the possible presence of harmful gases or a state of oxygen deficiency exists. Continuous monitoring of the air in the trench may be necessary depending upon the project/area.
5. Employees are not permitted to work beneath suspended loads or loads of moving earth during the excavation.

B. PAINTING

1. Respiratory protection is required for painters during spraying operations.
2. Fall protection will be worn when painting operations are six feet above the ground and the individuals are not protected by standard handrails.
3. Smoking is prohibited within 50 feet of any paint-spraying operation.
4. All paints, solvents and other flammable liquids associated with painting are to be stored and handled in accordance with the flammable liquids section of the manual.
5. Spray-painting equipment shall be cleaned in an open, well-ventilated area at least 50 feet from any ignition source.
6. Static charge dissipation measures must be taken while cleaning spray-painting equipment.

C. DEMOLITION

Demolition is a highly specialized activity and requires careful planning and competent supervision.

1. Prior to permitting employees to start demolition operations, a survey shall be made of the structure to determine its condition.
2. The area must be barricaded to prevent unauthorized personnel from entering.
3. Any asbestos-containing material must be removed according to local, state and federal regulations.
4. Crane operators must be able to see the work, or a signal person must be utilized.
5. Do not throw materials to the ground; lower them by cranes or chutes.
6. Never allow employees to work below other employees.
7. Never leave unstable structures in place without temporary support.

D. INSULATION

1. Any unknown material is to be treated as asbestos-containing material.
2. Contractor personnel are prohibited from removing or disturbing material until the insulation is determined to be asbestos-free.
3. Asbestos-containing material must be removed in accordance with local, state and federal requirements.

E. STEEL ERECTION

1. The area below steel erection activities must be barricaded to prevent access by unauthorized personnel.
2. A safety railing of one-half inch wire rope or the equivalent shall be installed, 42 inches high, around the perimeter of each floor during erection.
3. A hoisted steel member shall not be released until it is anchored by at least two bolts.
4. Tag lines must be used to control loads.
5. Personnel are prohibited from climbing columns, walking on beams, traversing the trusses and sitting on top of columns unless fall protection is provided.
6. Tools and containers for rivets, bolts or welding rods must be secured to prevent falling.

Name _____

Title _____

Date _____

VIII. EQUIPMENT

A. LADDERS/SCAFFOLDING

1. Scaffolds must be erected and used by persons engaged in work that cannot be done safely from the ground or from ladders.
2. All ladders used at Beloit Corporation must be ANSI approved.
3. Homemade or makeshift ladders are not to be used in the plant.
4. All ladders must be inspected prior to use and have all the required safety features.
5. Ladders must be identified with contractor name or initials.

6. All straight ladders must be tied off at the top.
7. Any ladder found to be defective or being used improperly will be taken out of service and all work stopped immediately until situation is corrected.
8. All scaffolding must meet OSHA/MIOSHA requirements for planking, handrails, ladder access, pinning scaffold sections, etc.
9. Scaffolding found unsafe will be taken out of service and work stopped immediately until situation is corrected.

B. SIGNS, SIGNALS AND BARRICADES

1. At locations where potential hazards exist, contractor personnel shall be responsible for posting, installing and maintaining signs, signals and barricades to detour the passage of persons or vehicles.
2. Barricades must be 42 inches high. Barricades shall be kept back six feet from the edge of excavations, holes, platforms and roofs.
3. Contractor employees shall obey all signs, signals and barricades which are posted to warn of potential or existing hazards such as "No Smoking" or Safety Glasses Required".
4. Flagmen must wear red or orange vests, and the flags must be red and at least 8 inches square.
5. The selection and use of signs and tags shall be in conformance with ANSI requirements.
6. Yellow tape with caution warnings is to be used where entry is allowed as long as the cautions are followed.

C. RIGGING

1. Inspect hooks, shackles, beam clamps and chokers before each use.
2. Do not leave unsecured or unattended suspended loads.
3. Use softeners, when appropriate to protect fiber lifting devices from being damaged.
4. Inspect wire rope slings for frays, kinks and worn spots before each use. Do not exceed safe working capacity.
5. Inspect fiber rope slings for broken fibers, wear and deteriorated inner and outer strands prior to use. Do not use fiber rope slings where fumes, vapors, sprays, mist or corrosive chemicals are present.
7. Destroy damaged slings immediately.

D. COMPRESSED AIR

1. Hoses and couplings must be checked daily before use. All hose couplings must be provided with a positive locking device.
2. Compressed air used for cleaning purposes must not exceed 30 psi. Wear goggles over safety glasses when conducting cleaning.
3. Hose and coupling connections must be safety-wired together.
4. Compressed air is not to be used for cleaning purposes.

E. MOTOR VEHICLES AND POWER-OPERATED EQUIPMENT.

1. Trucks and automobiles
   a. Facility speed limits and other regulatory signs must be obeyed.
   b. Pedestrians always have the right of way.
   c. Seatbelts must be worn at all times when riding in a vehicle equipped with seatbelts.
   d. Passengers in the rear of pickup trucks must be seated within the confines of the bed of

the truck. Riding on the side or on the tailgate of a pickup truck is prohibited.

e. All vehicles used during a project for contract activities must have reverse signal alarms.

f. Construction traffic control must be provided for cranes and vehicles in congested areas.

g. Contractors must take care to prevent trucks and other mobile equipment from colliding with pipelines, power lines and plant equipment.

2. Cranes

   a. Cranes are to be operated within the design limits specified by the manufacturer.

   b. Mechanical parts of the crane must be inspected by the operator prior to each shift.

   c. The rated load capacities, recommended operating speeds and special hazard warnings or instructions shall be posted conspicuously on all equipment.

   d. Rated load capacities, recommended operating speeds and special hazard warnings or instructions shall be posted conspicuously on all equipment.

   e. All accessible areas within the radius of the counterweight swing must be barricaded to limit access.

   f. Required clearance must be maintained between the crane and energized power lines.

   g. Personnel are prohibited from riding on the hook or the "headache" ball.

   h. All OSHA requirements must be followed when using personnel baskets.

   i. Outriggers must be fully extended and on firm ground.

   j. Crane inspections must be conducted on equipment per the OSHA standards.

3. Lift trucks

   a. Only authorized and trained personnel are permitted to operate a lift truck.

4. Vehicle Mounted Elevating and Rotating Work Platform

   a. Aerial Device. Any vehicle mounted device, telescoping or articulating, or both, which is used to position personnel.

   b. Only trained and authorized persons shall operate an aerial lift.

   c. Belting off to an adjacent pole, structure or equipment while working from an aerial lift shall not be permitted.

   d. A body belt shall be worn and a lanyard attached to the basket when working from an aerial lift.

   e. Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work platform. A high level of housekeeping is expected.

Name _____

Title _____

Date _____

IX. GENERAL SAFETY RULES

1. Horseplay of any kind is absolutely forbidden in the facility.
2. Do not walk or stand, under or beside suspended loads.
3. Contractor employees will use a designated route to and from the work site. The facility contract coordinator will assign the designated route.

4. When discarding boards, always remove protruding nails or bend them down.
5. Protective blinds must be used around welders to prevent other employees from receiving arc burns.
6. The use, possession, sale, transfer or purchase of alcohol, illegal drugs or controlled substances on Beloit Corporation property is prohibited.
7. Firearms and other weapons are forbidden in the facility.
8. Be familiar with emergency safety equipment located in the facility.
9. Exposed vertical reinforcing rods must be provided with protection such as plastic caps, 2 x 4 lumber, etc. to prevent impalement of personnel.
10. Only employees who have been properly trained are to operate machine tools, cranes and other equipment. **Contractors must have specific approval from Beloit management prior to operating any Beloit machinery or equipment.**
11. Contractor employees will be expected to adhere to all other established safety rules/policies developed by the facility.

Name _____

Title _____

Date _____

X. CONTRACTOR SIGN-OFF SHEET

I have read the information in this manual and understand that these are only guidelines. For specific information on policies and procedures see your Owner's Representative or the Safety Department.

_____
Date

_____
Company Name

_____
Owner's Representative

_____
Beloit Corporation Project Manager

THIS FORM MUST BE COMPLETED, SIGNED AND FILED IN THE SAFETY DEPARTMENT.